

CLAIMS

1. A Ti-containing ferritic stainless steel sheet comprising on mass percent basis: 0.01% or less of C; 0.5% or less of Si; 0.3% or less of Mn; 0.01% to 0.04% of P; 0.01% or less of S; 8% to 30% of Cr; 1.0% or less of Al; 0.05% to 0.5% of Ti; 0.04% or less of N, $8 \leq \text{Ti}/(\text{C}+\text{N}) \leq 30$ being satisfied; and the balance being substantially Fe and incidental impurities, wherein a grain size number of ferrite grain is 6.0 or more, and an average diameter D_p of precipitations, each being $[(\text{a long axis length of a Ti base precipitate} + \text{a short axis length thereof})/2]$, of the Ti base precipitates in the steel sheet is in the range of from 0.05 μm to 1.0 μm .

2. The Ti-containing ferritic stainless steel sheet according to Claim 1, wherein at least 50% of the total Ti content in the steel sheet is precipitated in the form of the Ti base precipitates.

3. The Ti-containing ferritic stainless steel sheet according to Claim 2, wherein at least 50% of the total P content in the steel sheet is precipitated in the form of the Ti base precipitates.

4. The Ti-containing ferritic stainless steel sheet according to one of Claims 1 to 3, wherein the steel sheet is a hot-rolled steel sheet.

5. The Ti-containing ferritic stainless steel sheet according to one of Claims 1 to 3, wherein the steel sheet is a cold-rolled steel sheet.

6. A method for manufacturing a Ti-containing ferritic stainless steel sheet comprising the steps of: hot-rolling steel which contains on mass percent basis: 0.01% or less of C; 0.5% or less of Si; 0.3% or less of Mn; 0.01% to 0.04% of P; 0.01% or less of S; 8% to 30% of Cr; 1.0% or less of Al; 0.05% to 0.5% of Ti; 0.04% or less of N, $8 \leq \text{Ti}/(\text{C}+\text{N}) \leq 30$ being satisfied; and the balance being substantially Fe and incidental impurities, for forming a hot-rolled steel sheet, and performing recrystallization annealing of the hot-rolled steel sheet at a temperature of (a precipitation nose temperature of Ti base precipitates $\pm 50^\circ\text{C}$) so that an average diameter D_p of precipitation diameters, each being $[(\text{a long axis length of a Ti base precipitate} + \text{a short axis length thereof})/2]$, of the Ti base precipitates in the steel sheet is in the range of from 0.05 μm to 1.0 μm and so that a grain size number of

ferrite grain is 6.0 or more.

7. The Ti-containing ferritic stainless steel sheet according to Claim 6, wherein at least 50% of the total Ti content in the steel sheet is precipitated in the form of the Ti base precipitates.

8. The Ti-containing ferritic stainless steel sheet according to Claim 7, wherein at least 50% of the total P content in the steel sheet is precipitated in the form of the Ti base precipitates.

9. The method for manufacturing a Ti-containing ferritic stainless steel sheet, according to Claim 6, further comprising the steps of: cold-rolling the hot-rolled annealed steel sheet; and subsequently performing final annealing of the cold-rolled steel sheet at a temperature less than (the precipitation nose temperature of Ti base precipitates + 100°C) so that the average diameter D_p of precipitation diameters, each being [(a long axis length of a Ti base precipitate + a short axis length thereof)/2], of the Ti base precipitates is in the range of from 0.05 μm to 1.0 μm and so that the grain size number of ferrite grain is 6.0 or more.

10. The method for manufacturing a Ti-containing ferritic stainless steel sheet, according to Claim 9, wherein the final annealing is performed at a temperature less than (the precipitation nose temperature of Ti base precipitates + 50°C) .

11. The method for manufacturing a Ti-containing ferritic stainless steel sheet, according to Claim 9 or 10, wherein at least 50% of the total Ti content in the steel sheet is precipitated in the form of the Ti base precipitates.

12. The method for manufacturing a Ti-containing ferritic stainless steel sheet, according to Claim 11, wherein at least 50% of the total P content in the steel sheet is precipitated in the form of the Ti base precipitates.